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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/624,810	07/24/2000	Robert William Bruce	13DV13228	6522

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EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 02/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/624,810

Applicant(s)

BRUCE ET AL.

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 July 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

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**DETAILED ACTION**

***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show items 28 and 84 in Figures 11 and 12 as described in the specification (page 19). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

*Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Dietrich et al (U.S. Pat. 4,988,844). Dietrich et al teaches an electron beam (10, 11; Figure 1; column 2, lines 40-51) melting furnace (Figure 1 – “electron beam melting furnaces”; column 2, lines 11-12) with a vacuum chamber (1, Fig.1; column 2, lines 40-55). Dietrich et al further teaches a crucible (6, Fig.1; column 2, lines 40-55) within the vacuum chamber and a material (“bath of molten evaporite”; column 2, lines 40-55) surrounded by and contained within the crucible. Dietrich et al also teaches electron beam guns (10, 11; Fig.1; column 2, lines 40-55) that can project an electron beam onto the surface of the coating material (Fig.1). Each electron beam gun having a higher intensity at a location between the surface of the coating material and the crucible than at a central region of the surface of the coating material – Here, Dietrich et al teaches that a combination of two electron beam guns can produce the claimed intensity profile in the x direction as shown in the graph of Figure 1 (38). However, from the arcuate (26,27, Fig.1) projection of each electron beam as shown and described (column 3, lines 38-40, 10-11, 25-26), Dietrich et al teaches that each electron beam produces the claimed intensity profile in the y direction (perpendicular direction, into/out of the plane of Figure 1) as shown in the graph of Figure 1 (38).

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Dietrich et al implicitly teaches the capability (column 2, lines 53-58; “despite the force urging them radially toward the outside”; column 3, lines 25-30) of projecting each electron beam onto a surface portion of the crucible contiguous with the “bath of molten evaporite” (column 2, lines 40-55). Dietrich et al implicitly teaches the capability, in the above cited portions of the patent, a beam pattern (as shown in Figure 11 of the application) with proximal and distal points at the perimeter of the beam pattern – Here, Dietrich et al already establishes the capability of forming one arcuate beam consisting of a semi-circle as described (column 3, lines 25-30). It is evident from the Dietrich et al deflection control (column 2, lines 53-58; column 4, lines 51-55) of the electron beams that, once “conveyor rod 5” (column 2, line 43) is raised.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dietrich et al (U.S. Pat. 4,988,844), as applied to claims 1-4, 6, and 7 above, and further in view of no additional references. Dietrich et al does not precisely teach the relative intensity, in percentages, as a function of position over a dimension of the crucible (column 4, line 63 – column 5, line 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the Dietrich et al relative intensity, in percentages, as a function of position over a dimension of the crucible whereby the intensity of the beam pattern at the proximal and distal points is about 30% to about 70% less than the intensity elsewhere at the perimeter of the beam.

Motivation for configuring the Dietrich et al relative intensity, in percentages, as a function of position over a dimension of the crucible whereby the intensity of the beam pattern at the proximal and distal points is about 30% to about 70% less than the intensity elsewhere at the perimeter of the beam is drawn to applying the electron beams “symmetrically to the melting bath” (column 4, lines 51-55)

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**Conclusion**

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S.Pat. 4,973,818; 6,214,408; 4,230,739; 4,238,525.

S.-N. Mei, et al, "A high ionization efficiency source for partially ionized beam deposition", *J.Vac.Sci.Technol. A* 6(1), Jan/Feb. 1988, pp. 9-11

Kazue Takahashi, et al, "The origins and elimination of oval defects in GaAs layers grown by molecular beam epitaxy", *J.Vac.Sci.Technol. A* 9(3), May/Jun. 1991, pp. 854-857

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (703) 305-1351. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (703) 308-0661. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (703) 308-1633.

  
GREGORY MILLS  
SUPERVISORY PATENT EXAMINER  
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